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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,037	08/09/2001	Hwan-Chul Rho	P56539	2495

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05/08/2003

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EXAMINER

PERRY, ANTHONY T

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/925,037

Applicant(s)

RHO ET AL.

Examiner

Anthony T Perry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-6 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of group I in Paper No. 5 is acknowledged. The traversal is on the ground(s) that subject matter of both claimed inventions is sufficiently similar such that a thorough search of either area would encompass a search for the alternative claimed invention. Therefore the search and examination of the entire application could be made without serious burden to the examiner. (MPEP § 803) This is not found persuasive because the examiner, in order to establish reasons for insisting upon restriction after distinctness has been demonstrated, must show by appropriate explanation that the following condition is held: there is separate classification. This shows that each distinct subject has attained recognition in the art as a separate subject for the inventive effort, and also a separate field of search. (MPEP § 808.02 A) It is noted that the examiner has asserted that the inventions of Group I and Group II are distinct and that both groups are separately classified. Therefore examiner properly satisfies the criteria for establishing undue burden in accordance with MPEP § 808.02 (A).

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Derfler et al. (US 4,559,281).

Regarding claims 1-2, Derfler teaches a cathode comprising a base metal 10 and an electron emissive material layer 12 attached on the base metal 10 (Fig. 1). The electron emissive material layer 12 includes a surface roughness measured from a distance between a highest point and a lower point of the surface of the electron emissive material layer of less than 5 microns. Derfler teaches that t is the thickness of the rough layer (col. 3, line 6). Derfler later says that it is preferred that $t = 1.5\text{-}3$ microns (col. 6, lines 40-61). If the rough layer is less than 5 microns then the difference between the highest point and the lowest point of the rough layer is positively less than 5 microns.

Regarding claim 5, the electron emissive material layer is attached to the base metal by deposition (col. 4, lines 33-44). Furthermore, the Examiner notes that the claim limitation that "the electron emissive material layer being attached on said base metal by one method selected from the group consisting essentially of printing and deposition" is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

Therefore, it is the position of the examiner that it would have been obvious to one of ordinary

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skill in the art that the electron emissive material layer disclosed by Derfler is at least a fully functional equivalent to the Applicant's claimed electron emissive material layer as evidenced by Derfler's suggestion of all of the Applicant's claimed structural limitations.

Regarding claim 6, the Examiner notes that the claim limitation that "the electron emissive material layer being attached to said base metal by a screen printing method" is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the electron emissive material layer disclosed by Derfler is at least a fully functional equivalent to the Applicant's claimed electron emissive material layer as evidenced by Derfler's suggestion of all of the Applicant's claimed structural limitations.

Claims 1-2 and 4-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamauchi et al. (US 6,351,061).

Regarding claims 1-2, Yamauchi teaches a cathode comprising a base metal 2 and an electron emissive material layer 3 attached on the base metal 2 (Fig. 1). Yamauchi teaches that the electron emissive material layer 3 includes a surface roughness measured from a distance between a highest point and a lower point of the surface of the electron emissive material layer being at most 15 microns (col. 5, lines 15-19). This range includes the range of less than or equal to 5 microns. Yamauchi further teaches that if the difference between the highest and

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lowest point is 10 microns or less that an even better current density distribution can be obtained (col. 5, lines 20-22).

Regarding claim 4, Yamauchi teaches that the thickness of the electron emissive material layer is 70 microns (col. 4, lines 45-49).

Regarding claim 5, the Examiner notes that the claim limitation that “the electron emissive material layer being attached on said base metal by one method selected from the group consisting essentially of printing and deposition” is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the electron emissive material layer disclosed by Yamauchi is at least a fully functional equivalent to the Applicant’s claimed electron emissive material layer as evidenced by Yamauchi’s suggestion of all of the Applicant’s claimed structural limitations.

Regarding claim 6, the Examiner notes that the claim limitation that “the electron emissive material layer being attached to said base metal by a screen printing method” is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one

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of ordinary skill in the art that the electron emissive material layer disclosed by Yamauchi is at least a fully functional equivalent to the Applicant's claimed electron emissive material layer as evidenced by Yamauchi's suggestion of all of the Applicant's claimed structural limitations.

Allowable Subject Matter

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the references of the prior art of record fails to teach or suggest the combination of the limitations as set forth in claim 3, and specifically comprising the limitation of the electron emissive material layer having a density of 2 to 5 mg/mm³. The best prior art of record teaches that the density of the electron emissive material layer is 0.8 mg/mm³.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee, and to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Debe (US 5,726,524); Nakagawa (US 6,376,975); Falce et al. (US 4,587,455); Nakanishi et al. (US 5,122,707); and Branovich et al. (US 4,957,463).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is (703) 305-1799. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for this Group is (703) 308-7382.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Anthony.perry@uspto.gov].

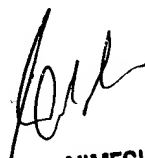
All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Anthony Perry
Patent Examiner
Art Unit 2879
May 15, 2003



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